

rains in southeastern States the latter half of the month were very favorable for winter grains, and wheat was greatly benefited in the lower Missouri Valley by the moisture received near its close.

Truck and miscellaneous crops, as well as pastures, ranges, and stock, continued generally in satisfactory condition, although some damage was done to sweet potatoes and truck in the Southern States by the freeze near the

middle of the month. Ranges and pastures were benefited in the Pacific Coast States by the increased moisture received. Stock suffered considerably, however, in the Great Plains and Rocky Mountain States because of cold weather during the second decade, while, at the same time, deep snow in some central Rocky Mountain districts made range feed inaccessible.

### CLIMATOLOGICAL TABLES.\*

#### CONDENSED CLIMATOLOGICAL SUMMARY.

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course the number of such records is smaller than the total number of stations.

*Condensed climatological summary of temperature and precipitation by sections, November, 1920.*

Section.	Temperature.								Precipitation.							
	Section average.	Departure from the normal.	Monthly extremes.				Section average.	Departure from the normal.	Greatest monthly.				Least monthly.			
			Station.	Highest.	Date.	Station.			Station.	Amount.	Station.	Amount.	Station.	Amount.	Station.	Amount.
Alabama.....	51.0	-2.9	Auburn.....	89	6	Florence.....	18	13†	In. 3.03	+0.07	Milstead.....	In. 5.32	Benton.....	In. 0.70		
Arizona.....	50.2	-1.1	Gila Bend.....	86	19	Lakeside.....	4	30	In. 0.21	-0.75	Pinedale.....	In. 2.08	28 stations.....	In. 0.00		
Arkansas.....	47.8	-3.9	Hope.....	89	7	Dutton.....	10	18	In. 1.95	-1.47	El Dorado.....	In. 5.78	Mountain Home.....	In. 0.21		
California.....	51.2	-1.7	Corona.....	87	14	Portola.....	9	2	In. 5.34	+2.53	Branscomb.....	In. 32.55	7 stations.....	In. 0.00		
Colorado.....	32.4	-2.1	Cheyenne Wells.....	78	20	Created Butte.....	-24	26	In. 0.64	-0.08	Silver Lake.....	In. 3.50	4 stations.....	In. 0.00		
Florida.....	64.3	-1.1	3 stations.....	89	7	Mount Pleasant.....	25	18	In. 4.06	+1.83	Titusville.....	In. 6.92	Johnstown.....	In. 1.48		
Georgia.....	52.8	-1.6	Quitman.....	86	10	2 stations.....	18	13†	In. 3.80	+1.12	Waycross.....	In. 6.00	Americus.....	In. 1.84		
Hawaii (October).....	73.7	+0.2	Mahukona.....	94	20	2 stations.....	51	22†	In. 5.59	+0.70	Pepeekeo.....	In. 21.62	3 stations.....	In. 0.00		
Idaho.....	35.3	-0.7	Springfield.....	64	18	Stanley.....	-10	28	In. 2.60	+0.19	Alpna.....	In. 6.39	Challis.....	In. 0.21		
Illinois.....	40.5	-1.3	Carbondale.....	78	6	2 stations.....	8	13	In. 1.08	-1.44	Harrisburg.....	In. 2.33	Hillsboro.....	In. 0.84		
Indiana.....	41.3	-0.8	2 stations.....	75	6	4 stations.....	9	13†	In. 2.19	-1.04	Scottsburg.....	In. 4.79	Terre Haute.....	In. 0.61		
Iowa.....	35.4	+0.4	2 stations.....	71	20	3 stations.....	5	11†	In. 2.19	+0.68	Humboldt.....	In. 4.45	Lamoni.....	In. 0.78		
Kansas.....	40.1	-4.4	2 stations.....	79	19	Leoti.....	-4	12	In. 1.41	+0.19	Holton.....	In. 3.59	Oakley.....	In. 0.01		
Kentucky.....	44.7	-1.4	2 stations.....	79	7	Anchorage.....	10	13	In. 2.21	-1.14	Middleboro.....	In. 4.63	Blandville.....	In. 0.92		
Louisiana.....	54.3	-4.2	2 stations.....	88	8†	Calhoun.....	17	17	In. 3.93	+0.55	Cheneyville.....	In. 6.55	Melville.....	In. 1.10		
Maryland-Delaware.....	44.7	-0.2	4 stations.....	78	1	Oakland, Md.....	3	14	In. 4.09	+1.58	Seaford, Del.....	In. 7.83	Chesapeake City, Md.....	In. 2.89		
Michigan.....	35.4	-0.5	Wasepi.....	69	21	Humboldt.....	-2	16	In. 2.39	-0.24	Alpena (near).....	In. 3.96	St. Joseph.....	In. 0.57		
Minnesota.....	29.7	-0.1	Canby.....	65	5	2 stations.....	-4	11†	In. 1.18	+0.18	Winona.....	In. 4.46	Alexandria.....	In. 0.00		
Mississippi.....	50.8	-4.2	Canton.....	88	6†	2 stations.....	17	17	In. 3.27	-0.02	Anguilla.....	In. 5.97	Collins.....	In. 1.21		
Missouri.....																
Montana.....	30.8	-1.8	2 stations.....	69	13†	Cascade.....	-28	12	In. 0.50	-0.51	Benton.....	In. 2.33	5 stations.....	T.		
Nebraska.....	35.1	-1.4	Imperial.....	77	19	Harrison.....	-7	12	In. 1.15	+0.42	Bradshaw.....	In. 3.72	2 stations.....	In. 0.00		
Nevada.....	39.4	-1.1	Las Vegas.....	79	4	Lamolile.....	4	9	In. 0.81	+0.04	Mariette Lake.....	In. 4.70	Logandale.....	In. 0.00		
New England.....	35.1	-1.4	Waterbury, Conn.....	78	2	Van Buren, Me.....	-19	29	In. 4.46	+1.09	Somerset, Vt.....	In. 9.41	Presque Isle.....	In. 1.35		
New Jersey.....	43.0	0.0	Bridgeton.....	74	1	Culver Lake.....	11	13	In. 4.41	+0.96	Long Branch.....	In. 7.90	Trenton.....	In. 2.14		
New Mexico.....	41.4	-1.4	2 stations.....	82	20†	Elizabethtown.....	-3	3	In. 0.24	-0.42	Pearl (near).....	In. 1.90	15 stations.....	In. 0.00		
New York.....	36.7	-0.8	3 stations.....	70	1	North Lake.....	1	13	In. 4.07	+1.28	North Lake.....	In. 6.66	Chazy.....	In. 1.90		
North Carolina.....	49.0	-0.1	Rockingham.....	83	10	2 stations.....	11	13	In. 4.69	+2.33	Mount Airy.....	In. 7.35	Banners Elk.....	In. 2.70		
North Dakota.....	28.0	+1.4	Steely.....	65	3†	Dunn Center.....	-14	9	In. 0.37	-0.21	Langdon.....	In. 1.10	3 stations.....	T.		
Ohio.....	40.5	-0.8	Portsmouth.....	72	1	McArthur.....	5	18	In. 2.82	+0.30	Piqua.....	In. 5.29	Youngstown.....	In. 1.43		
Oklahoma.....	46.4	-4.2	Hobart.....	85	21	Oakwood.....	8	16	In. 1.70	-0.29	Okeene.....	In. 3.78	Tamaha.....	In. 0.15		
Oregon.....	40.5	-1.2	Florence.....	70	16	Blitzen.....	-10	7	In. 4.44	-0.19	Agness.....	In. 13.59	Umatilla.....	In. 0.66		
Pennsylvania.....	40.3	-0.5	Gettysburg.....	75	1	2 stations.....	5	14	In. 3.54	+1.01	Waterville.....	In. 6.42	New Castle.....	In. 1.79		
Porto Rico.....	77.0	-0.2	Jayuya.....	93	22†	Albonito.....	57	26†	In. 5.11	-2.50	Humacao.....	In. 11.04	Coamo.....	In. 1.08		
South Carolina.....	52.3	-1.5	Darlington.....	87	8	Landrum.....	18	14	In. 3.62	+1.34	Gaston Shoals.....	In. 6.99	Orangeburg.....	In. 1.60		
South Dakota.....	31.3	-0.5	2 stations.....	70	19	Spearfish.....	-14	12	In. 0.98	+0.56	Centerville.....	In. 2.37	Custer.....	T.		
Tennessee.....	45.9	-2.4	4 stations.....	82	6†	Crossville (near).....	10	18	In. 2.39	-0.72	Jefferson City.....	In. 4.70	Trenton.....	In. 0.96		
Texas.....	54.1	-2.9	Fort Stockton.....	96	20	Clint.....	9	29	In. 2.66	+0.27	Houston.....	In. 6.07	E. V. Ranch.....	In. 0.00		
Utah.....	36.5	-0.7	Rivervale.....	84	21	Black's Fork.....	-15	10	In. 0.99	-0.12	Silver Lake.....	In. 3.91	3 stations.....	In. 0.00		
Virginia.....	45.8	-0.4	3 stations.....	80	1†	Wise.....	3	17	In. 5.27	+3.10	Blacksburg.....	In. 7.84	Speers Ferry.....	In. 1.88		
Washington.....	40.6	+0.6	Washtougal.....	73	18	2 stations.....	8	10	In. 4.00	-1.16	Wind River.....	In. 16.90	Lowden.....	In. 0.46		
West Virginia.....																
Wisconsin.....	32.6	-0.8	Wisconsin Rapids.....	68	20	Solon Springs.....	-6	12	In. 2.31	+0.55	Baraboo.....	In. 4.27	Winter.....	In. 0.77		
Wyoming.....	28.1	-3.7	Pine Bluff.....	69	19	Pinedale.....	-22	13	In. 0.63	-0.10	Snake River.....	In. 2.44	2 stations.....	In. 0.00		

\* For description of tables and charts, see this REVIEW, January, 1920, p. 54.

† Other dates also.











TABLE 3.—Data furnished by the Canadian Meteorological Service, November, 1920.

Stations.	Altitude above mean sea level, Jan. 1, 1919.	Pressure.			Temperature of the air.						Precipitation.		
		Station reduced to mean of 24 hours.	Sea level reduced to mean of 24 hours.	Departure from normal.	Mean max. + mean min. + 2.	Departure from normal.	Mean maximum.	Mean minimum.	Highest.	Lowest.	Total.	Departure from normal.	Total snowfall.
St. Johns, N. F.	125	29.72	29.88	— .08	32.3	-4.2	37.4	27.3	58	15	5.09	-0.48	4.0
Sydney, C. B. I.	48	30.00	30.05	+0.10	35.3	-1.8	41.2	29.3	59	17	4.11	-1.33	11.5
Halifax, N. S.	88	29.96	30.07	+ .08	36.2	-1.1	43.8	28.6	60	18	5.02	-0.64	1.4
Yarmouth, N. S.	65	29.98	30.05	+ .03	38.2	-1.7	44.8	31.6	61	21	4.25	-0.31	3.3
Charlottetown, P. E. I.	38	30.00	30.04	+ .08	33.4	-2.1	38.9	28.0	60	19	2.69	-1.28	9.9
Chatham, N. B.	28	30.05	30.08	+ .11	29.7	-1.3	37.2	22.2	60	0	2.95	-0.80	9.2
Father Point, Que.	20	30.04	30.06	+ .10	25.7	-3.2	32.4	19.1	45	4	1.99	-1.12	12.1
Quebec, Que.	298	29.78	30.12	+ .10	27.4	-1.6	32.5	22.4	44	6	2.11	-1.65	12.1
Montreal, Que.	187	29.89	30.11	+ .10	31.4	-0.4	36.5	26.4	50	12	2.61	-1.13	10.9
Stonecliff, Ont.	489	29.45	30.08	+ .07	24.2	-4.9	35.7	12.7	46	-4	2.11	-0.47	9.9
Ottawa, Ont.	236	29.84	30.12	+ .10	31.7	0.0	38.2	25.3	52	13	3.24	+0.70	15.5
Kingston, Ont.	285	29.78	30.10	+ .08	35.4	+0.4	41.4	29.5	55	15	3.70	+0.46	23.5
Toronto, Ont.	370	29.69	30.11	+ .07	36.7	+1.1	42.0	31.5	62	20	3.80	+0.66	10.9
Cochrane, Ont.	930												
White River, Ont.	1,244	28.71	30.07	+ .09	21.7	+1.2	31.5	12.0	45	-8	0.67	-1.18	6.7
Port Stanley, Ont.	592	29.40	30.06	+ .11	37.6	+0.8	44.2	31.0	60	16	8.26	+4.89	10.1
Southampton, Ont.	656	29.35			35.6	+0.6	41.0	30.3	54	6	4.39	+0.69	12.2
Parry Sound, Ont.	688	29.39	30.00	- .01	33.4	+1.3	39.7	27.1	54	8	2.93	-1.44	4.1
Port Arthur, Ont.	644	29.38	29.98	- .02	27.8	+3.8	34.1	21.5	42	-1	0.56	-0.77	1.6
Winnipeg, Man.	760	29.25	30.12	+ .08	25.2	+7.3	32.7	17.8	47	0	1.50	+0.42	11.3
Minnedosa, Man.	1,690	28.22	30.10	+ .06	24.1	+6.8	30.8	17.4	48	0	0.79	-0.21	6.8
Le Pas, Man.	860												
Qu'Appelle, Sask.	2,115	27.75	30.06	+ .06	25.2	+6.4	32.4	18.1	46	-9	0.66	-0.23	3.4
Medicine Hat, Alb.	2,144												
Moose Jaw, Sask.	1,759												
Swift Current, Sask.	2,392	27.44	30.17	+ .15	28.4	+5.2	37.3	19.6	54	-8	0.22	-0.47	0.9
Calgary, Alb.	3,428												
Banff, Alb.	4,521												
Edmonton, Alb.	2,150												
Prince Albert, Sask.	1,450	28.46	30.09	+ .06	23.9	+8.5	31.7	16.2	50	0	0.87	+0.04	6.5
Battleford, Sask.	1,592	28.25	30.04	+ .02	26.8	+10.3	34.4	18.8	55	2	0.22	-0.36	T.
Kamloops, B. C.	1,262	28.82	30.15	+ .19	36.6	+3.2	43.0	30.1	52	11	0.78	0.68	T.
Victoria, B. C.	230	29.75	30.00	+ .01	46.0	+2.8	50.5	41.6	58	35	3.11	-3.86	0.0
Barkerville, B. C.	4,180	25.59	29.97	+ .07	27.7	+4.1	34.3	21.0	42	6	2.66	-0.63	21.0
Triangle Island, B. C.	680												
Prince Rupert, B. C.	170												
Hamilton, Bermuda.	151	29.99	30.16	+ .10	70.7	+2.0	76.3	65.1	82	58	3.80	-0.58	0.0

## SEISMOLOGY.\*

W. J. HUMPHREYS, Professor in Charge.

[Dated: Weather Bureau, Washington, D. C., Jan. 3, 1921.]

TABLE 1)—Noninstrumental earthquake reports, November, 1920.

Day.	Approximate time, Greenwich civil.	Station.	Approximate latitude.	Approximate longitude.	Intensity Rossi-Forel.	Number of shocks.	Duration.	Sounds.	Remarks.	Observer.
1919. Nov. 9	H. m. 0 40	MAINE.	• •	• •			Sec.	Loud rumbling...	Felt at several other towns in State also.	G. Brown.
		OREGON.								
9 28	20 20 11 43	Portland..... Portland.....	45 00 45 30	67 00 122 40	4 3	1 1	5 3	None..... do.....	Felt by many..... do.....	E. H. Jones. F. D. Young.
		WASHINGTON.								
28	11 33 11 40	Longmire..... Detroit.....	46 50 47 20	121 50 122 50	4 3	1 2	35 10	Rumbling..... None.....	Felt at Paradise Inn also..... Felt by one.....	J. B. Flett. W. O. Eckert.
		UTAH.								
20 25	5 40 24 00	Brigham..... St. George.....	41 30 37 05	112 00 113 30	6 6	1 1	30 60	Rumbling..... do.....	Felt by many..... Felt by everyone.....	J. N. Andersen. R. U. Macfarlane.